Management Plan

Waste Management Plan: Isachsen High Arctic Weather Station (HAWS), Nunavut (Kuukyoak, 2026)

KUUKYOAK

NUNAVUT IMPACT REVIEW BOARD (NIRB)

Waste Management Plan: Isachsen High Arctic Weather Station (HAWS), Nunavut

Prepared on behalf of Environment and Climate Change Canada (ECCC)

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1.0 Introduction

1.1 Key Information

This management plan applies to the operations as part of remediation work being carried out at the Isachsen High Arctic Weather Station (HAWS) Remediation Project (the Project) by Environment and Climate Change Canada (ECCC), and their contractors. This Waste Management Plan (Plan) is being submitted to support the Nunavut Impact Review Board (NIRB) review process. The contracting authority for this project is Public Services and Procurement Canada (PSPC). This current version of the Plan is conceptual in nature, and a more comprehensive plan will be submitted by the successful Remediation Contractor with specific means and methods. This current plan is considered as the minimum standard that submittals will be measured against.

Table 1 provides key information relating to the project.

Table 1. Key Project Information

Project Name and Location	Isachsen High Arctic Weather Station (HAWS) Remediation Project (the Project) 78° 46’ 40” N, 103° 31’ 40” W
Federal Department	Environment and Climate Change Canada
Contact	Owen Wade Tel: 613-981-8652 owen.wade@ec.gc.ca
Project Office Location	351 St. Joseph Boulevard, 18th Floor, Gatineau, QC K1A 0H3
Contractor	TBC
Contractor Contact Information	TBC
Contractor Address	TBC

1.2 Purpose and Scope

The purpose of this Plan is to guide the waste management activities for the Project. The waste will be generated through two general streams: 1) existing legacy waste from the operation of the weather station;

and 2) waste generated from remediation activities. It is intended to be the minimum standard for waste management that Kuukyoak requires of itself and its contractors for the duration of the project.

This Plan will be presented to all staff during their on-site orientation sessions. During the worker orientation seminar, training sessions will be scheduled to ensure employees understand their role within the waste management strategy on-site.

The primary objective of the Project is to mitigate hazards and remediate the existing legacy waste at the site.

1.3 Site Description

The Isachsen HAWS property (Site) is within the Directory of Federal Real Property (DFRP) land reserve (DFRP # 075272) which has a total area of approximately 450 hectares (ha). The Site is centered at a latitude of 78 degrees 46 minutes 40 seconds N and longitude of 103 degrees 31 minutes 40 seconds W facing Louise Bay, on the west-facing side of Ellef Ringnes Island, NU. The Site is occupied by approximately 22 permanent structures with associated infrastructure, equipment, and supplies. Other features previously identified at the Site, in addition to the 22 structures, include a 1,500-metre-long runway, former water and sewage infrastructure, fuel storage and distribution facilities, power generation equipment, two on-site waste disposal areas (WDAs), fuels tanks, thousands of empty/partially empty drums, other abandoned equipment, and debris.

Originally established in 1947 as one of five joint Canadian–American High Arctic Weather Stations, the Site supported meteorological monitoring, including upper-atmosphere observations using weather balloons. Operations transitioned fully to Canada in 1972 and continued until the station was decommissioned in 1978. Since then, the site has operated as an automated weather station and has intermittently supported scientific research and training activities. Due to its extreme remoteness, access has been almost exclusively by air.

1.4 Project Description

The Project is expected to span until 2030. A summary of the Project related activities is provided in the below:

- Mobilization of personnel, equipment, materials and support facilities, including fuel;
- Collection of borrow material (aggregate) to produce airstrip upgrades, road upgrades, construct a new engineered on-site landfill, cap the existing waste disposal areas, construct a camp pad and temporary waste storage area, and general site re-grading.
- Construction of a temporary accommodations camp;
- Construction of a new engineered landfill designed to accommodate the existing waste on site.
- Demolition of structures and buildings including removal and management of hazardous materials;
- Collection, cleaning and crushing of barrels;

- Collection and sorting of debris;
- Segregation, consolidation, packaging and containerization of all equipment, materials and debris (hazardous and non-hazardous);
- Deconstruction of the temporary accommodations camp and packaging for removal;
- Demobilization of unused fuel brough to site for project activities, materials and equipment off-site including transportation of containerized soil and hazardous/non-hazardous waste and debris; and,
- Disposal of waste materials in the on-site engineered landfill or off-site facilities.

1.5 Roles and Responsibilities

Table 2 outlines the roles and responsibilities for personnel working on-site with respect to the management of the potential risks associated with erosion and sediment control.

Table 2. Roles and Responsibilities

Role	Responsibility
ECCC Departmental Representative	Require contractor Project Manager to prepare a contractor waste management plan that adheres at a minimum to the requirements laid out in this plan.
Contractor Project Manager	Design and oversee work methods to manage waste generation on site and ensure the necessary resources are available to implement this plan.
Site Supervisor	Implement and supervise the work at the site as set out in this plan.
	Consult with Project Manager for mitigation measures in response to potential issues.
	Maintain communications with PM to ensure monitoring and responses are appropriate.
	Will implement and monitor the Erosion, Sediment work methods at site when required as laid out in this plan.
Employees, sub-contractor, and visitors	Follow the requirements set out in this plan.

1.6 Key Contacts

Table 3 provides contact information for key personnel related to the Project.

Table 3. Key Contacts

Name	Position	Contact #	Organization
Owen Wade	ECCC Project Manager	Tel: 613-981-8652 Owen.wade@ec.gc.ca	ECCC - 351 St. Joseph Boulevard, 18th Floor, Gatineau, QC K1A 0H3
Ryan Breivik	PSPC Project Manager	Tel: 587-443-2699 Ryan.breivik@tpsgc-pwgsc.gc.ca	PSPC - 9700 Jasper Avenue, Edmonton, AB T5J 4C3
TBC	Contractor Project Manager		
TBC	Contractor Environment, Health, and Safety Coordinator		
TBC	Site Supervisors		

1.7 Training

Employees and subcontractors will be trained on the waste management measures outlined in this Plan and will be responsible for implementing the measures as required under the direction of the Site Supervisor. Personnel will also be required to be trained on any Safe Work Procedures that are associated with waste management procedures. Visitors to the site will be given an induction on any waste management procedures relevant to their work.

2.0 Waste Management Approach

2.1 Waste Streams

This Plan considers both legacy waste streams and Project generated waste streams. For reference, Table 4 below displays a breakdown of waste types.

Table 4. Waste Streams

Waste Stream	Project Generated Waste	Legacy Site Waste
Hazardous or Potentially Hazardous Wastes		
Batteries		✓
Asbestos Containing Materials		✓
Mercury Containing Materials		✓
Ozone Depleting Substances		✓
Polychlorinated Biphenyls (PCBs)		✓
Chemical Wastes – Liquids and Solids		✓
Used Oil, Fuels, Lubricants, Greases, Oil Filter, and Solvents	✓	✓
Non-Hazardous Waste		
Historic Building Demolition Waste		✓
Camp Construction/Demolition Waste	✓	
Camp Facilities Refuse	✓	
Metal Debris		✓
Cans/Plastics	✓	✓
Grey water	✓	
Sewage	✓	

Legacy Site Waste

The management of Legacy Site Waste is detailed within the Isachsen HAWS RAP. The volumes of waste and their management are outlined below in Table 5.

Table 5. Legacy Site Waste

Waste Stream	Volume	Waste Management
Remaining waste fuel/oily water mix (post incineration activities)	13,000 L	Off-site Disposal
Landfillable non-hazardous waste (metal debris, building demolition waste, waste drums, non-operational and operational vehicles)	5,350 m^3	On-Site Landfill
Hazardous waste that can be landfilled following proper special handling/packaging and abatement (Asbestos Containing Materials)	55 m^3	On-Site Landfill
Hazardous waste requiring off-site disposal (mercury containing materials, ozone-depleting substances, PCBs)	4 L	Off-site Disposal

The management of Project Generated Waste is detailed below. The volumes of waste and their management are outlined below in Table 6.

Table 6. Project Generated Waste

Waste Stream	Volume	Waste Management
Hazardous or Potentially Hazardous Wastes		
Chemical Wastes – Liquids and Solids	unknown	Off site Disposal
Used Oil, Fuels, Lubricants, Greases, Oil Filter, and Solvents	unknown	Off site Disposal
Non-Hazardous Waste		
Camp Construction/Demolition Waste	unknown	Off site Disposal

Waste Stream	Volume	Waste Management
Camp Facilities Refuse	unknown	Off site Disposal
Cans/Plastics	unknown	Off site disposal/recycling
Grey water	unknown	Primary treatment consisting of solid removal followed by a land application method greater than 100 m from watercourses.
Sewage	unknown	Off site Disposal

The Contractor will be responsible for:

- Tracking the volume of waste;
- Documenting the final location of all waste, including transport records and manifests;
- Documenting all materials salvaged during the remedial program;
- Complying with remedial specifications, governing acts/regulations concerning waste materials and site permits.

A summary level overview of the waste management approaches to be applied to Legacy Site Waste is as follows:

- Non-Hazardous Waste: Includes metals, glass and other non-hazardous debris from waste disposal areas, scattered refuse, building/infrastructure demolition and vehicles/equipment. This waste will be placed in the on-site engineered landfill.
- Hazardous Waste: Includes hazardous materials from waste disposal areas, asbestos, batteries, waste fuel. All hazardous waste will be packaged and shipped per the Transportation of Dangerous Good Act to a licensed hazardous waste management facility. Transport of materials will be tracked by the remedial Contractor. Hazardous waste that can be landfilled following proper special handling/packaging and abatement (Asbestos Containing Materials) will be placed in the on-site engineered landfill.

The Contractor will be required to prepare a comprehensive Waste Management Plan building upon this document and outlining the proposed method of handling each kind of Project generated waste streams listed in Table 3. Minimum standards and assumptions are provided below.

2.2 Description of Waste Management

Successful waste management requires the separation of different types of wastes as appropriate. The Contractor will include detailed descriptions, for each type of waste management infrastructure. The following three categories are predicted:

1. Engineered On-site Landfill;
2. Recyclable Material;
3. Incineration of Domestic Waste (as defined by the Contractor); and
4. Transfer to Approved Off-Site Facilities.

2.2.1 General Requirements

Waste management requires a systematic approach to ensure waste reduction and environmental effects are mitigated. Certain processes and protocols are specific to the individual types of waste management infrastructure; however, there are certain procedures common to all:

- Waste must be segregated into categories specific to each waste stream;
- Storage of waste materials must be done in such a way to prevent environmental impact, limit animal attraction and maintain worker safety;
- Health and safety training must be provided to workers and tailored to the specific scope of work required;
- All waste management activities must be documented, including volumes, personnel responsible, material transport procedures/manifests and any incidents;
- Failures in the waste management approach which result in environmental or health and safety incidents must be evaluated to determine corrective actions; and,
- Throughout all waste management processes, opportunities for source reduction, recycling and reuse/recovery should be evaluated and enacted where possible.

2.2.2 On-Site Engineered Landfill

The existing legacy waste at site is earmarked for disposal at the new engineered on-site landfill. Waste designated for landfilling primarily includes non-hazardous materials such as metal debris, building demolition waste, decommissioned equipment, and processed fuel drums. Certain hazardous materials, such as asbestos-containing materials, may also be disposed of on-site following appropriate abatement, handling, and packaging procedures in accordance with regulatory requirements. Waste fuel drums will be cleaned, crushed, and consolidated prior to placement in the engineered landfill. Non-hazardous waste associated with decommissioned equipment and miscellaneous surface debris, including metal and wood, will also be collected, processed as required, and disposed of within the landfill. The engineered landfill is intended for the on-site disposal of non-hazardous inert materials and has been designed with flexibility to accommodate the anticipated range of waste volumes through adjustable berm heights.

2.2.3 Recyclable Material

All materials appropriate for normal recycling (i.e. empty food cans, plastics) will be bagged and shipped opportunistically on backhauls to a recycling facility. Materials such as plastics, foams and rubbers can be separated on-site and shipped to an approved facility. Select items on-site can be sent back to the manufacturer for recycling or reuse. Large, reusable containers such as drums can be sent back to the supplier. Metal parts from heavy equipment can also be sent back to the supplier for reconditioning and reuse.

These materials present no environmental risk; however, may be an animal attractant from residual odours. Recyclable material must be securely stored to prevent animal attraction and habituation.

2.2.4 Incineration of Domestic Waste (as defined by the Contractor)

Several types of Project generated material will be eligible for incineration. Any incineration should occur after source reduction, reuse and recycling have been considered. Waste suitable for incineration is generally inert waste, with the exception of the odours of camp food waste which are animal attractants. Materials include food waste and camp facilities refuse (including, paper products, cardboard, paper, newspapers and magazines, most packaging, waxed paper, paper towels, serviettes and paper cups).

The Contractor, at their discretion, will be required to provide a dual chamber, forced air, fuel fired incinerator to site to process applicable Project generated waste. Incinerators must meet the requirements of the Canada-wide Standards for Dioxins and Furans and the Canada-wide Standards for Mercury Emissions. As part of the larger Waste Management Plan, the Contractor will be required to outline the Incineration Plan. The plan must be aligned with Environment Canada's Technical Document for Batch Waste Incineration to ensure air emissions are minimized.

Incineration may be used for various reasons, including reduced wildlife attractants to food waste and reduction of waste volumes. Incineration of eligible waste will generate ash. Any ash produced from incineration will be subject to testing for hazardous material content. Ash material will be disposed of accordingly, at an off-site waste management facility. The Contractor will be requested to incinerate materials daily; however, should any food or kitchen wastes require storage, materials must be well sealed to limit wildlife attraction. The incinerator will be located in a designated burn area free from combustible materials or vegetation and downwind of camp facilities. Fire response equipment must be readily available and operators trained in response measures. All incinerator operators will be appropriately trained on the specific unit in use, including operation, maintenance and testing protocols.

2.2.5 Transfer to Approved Facilities

All project-generated hazardous waste as well as any material which cannot be incinerated, landfilled, or recycled will be packaged and shipped to an approved waste management facility for disposal (hazardous or non-hazardous based on product). This includes material such as:

- Waste oil/product from vehicles and equipment;

- Vehicle components (e.g. anti-freeze);
- Lead acid or alkaline batteries;
- Ozone Depleting Substances (ODS)
- Mercury Containing Materials (e.g., fluorescent light tubes, thermostats)
- Aerosol cans;
- Contaminated materials from any spill response or hydrocarbon management (e.g. spill pads, sorbents);
- Incinerator ash and residue exceeding applicable criteria; and
- Solvents and paint.

All materials destined for off-site disposal must be stored safely and securely before transport. Storage of liquid and solid wastes destined for off-site disposal will be stored in steel drum containers meeting *Transportation of Dangerous Goods Act* and Regulations, closeable lids, and labels for marking contents and date filled. Shipment of these materials to licensed facilities must be conducted by trained individuals in accordance with the *Transportation of Dangerous Goods Act.*

Best management practices and environmental planning (e.g. the Spill Prevention Plan) are expected to reduce the potential for PHC releases to the environment during the Project. Despite these efforts, there is a potential for spills to occur. Should any fuel release occur during active remediation, impacted soils will be collected for transport off-site to a waste management facility licensed to accept the soils.

2.2.6 Wastewater

The Project may generate three discrete wastewater streams to be contained and managed separately:

- Camp Greywater (washing, general use), kitchen sumps/traps
- Camp Blackwater (sewage)
- Process Wastewater: Water used for washing and decontamination, such as washing drums, tanks, equipment, soil and non-hazardous waste before storage and off-site disposal.

Wastewater management will be further addressed through the Water Licence application with the Nunavut Water Board.

Camp Greywater

Camp Greywater will be discharged on-site. Greywater from camp facilities will be treated by first passing it through a filtration or settling process to remove solids, followed by disposal of the effluent using a land-application method, allowing the soils to absorb and naturally filter any remaining nutrients or contaminants. Effluent will be released onto the ground at a location, reviewed and accepted by the Departmental Representative that is a minimum of 100 m from natural drainage. Discharge locations will be selected to minimize erosion. No direct discharge will be permitted to surface water or wetlands.

Camp Blackwater

Camp Blackwater will be collected and transported off-site for disposal.

Process Wastewater

Process water may be required during remedial activities and will be sampled and disposed of off-site at a facility licensed to accept the wastewater or treated on-site and disposed of via ground discharge.

3.0 Monitoring

Throughout the completion of waste management activities, the transportation and disposal of waste will be recorded using tracking forms. Details pertaining to the various sampling requirements associated with the waste management at the Project site will also be recorded. Potential concerns or discrepancies will be noted and remedied appropriately. The procedures and methods used may be adjusted depending on the information recorded during the implementation of this plan. The waste management methods and techniques will be recorded and assessed to determine the effectiveness, and practices will be revised and improved as necessary.

4.0 Closure

Upon completion of work, the Contractor must remove all Project generated waste materials from the sites. Inspections will be conducted by the Owner's Representative to ensure conditions for closure have been met.